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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,540	09/26/2003	Hiroshi Watanabe	TIJ-35394	3736
23494	7590	06/23/2004	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			LAM, TUAN THIEU	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,540

Applicant(s)

WATANABE ET AL.

Examiner

Tuan T. Lam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-24 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-21 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 11 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "a third constant current source circuit connected in series with the third diode between the first port and the gate terminal of the first MOS transistor" as called for in claim 12, "a fourth constant current source circuit connected in series with the fourth diode between the second port and the gate terminal of the first MOS transistor" as called for in claim 15. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

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consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3 and 6-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, the recitation of "a first switch" in line 3 is indefinite because it fails to provide the connection for the first switch. The recitation of "the first clamping circuit" in line 2 lacks proper antecedent basis. Correction is required.

In claim 6, the recitation of "a second clamping circuit" in line 2 lacks proper antecedent because there is no first clamping circuit recited in claim 1.

In claim 7, the recitation of "a second switch" in line 3 is indefinite because it fails to provide the connection for the second switch. The recitation of "the second switch" in line 2 lacks proper antecedent basis because there is no first switch recited in claim 1 or claim 6. Correction is required.

In claim 10, the recitation of “a third diode” in line 2 lacks proper antecedent basis because there is no first or second diodes recited in claim 1. Clarification and correction is required.

In claim 12, the recitation of “a third current source” in line 2 lacks proper antecedent basis because there is no first or second current sources recited in claim 10 or claim 1. The recitation of “a third constant current source circuit connected in series with third diode between the first port and the gate terminal of the first MOS transistor” is indefinite because it is misdescriptive. Figure 1 shows two current sources 20 and 28. However, the two current source are not connected as claimed. Clarification and correction is required.

In claim 13, the recitation of “fourth diode” in line 2 lacks proper antecedent basis because there is no first, second or third diodes recited in claim 1. Correction is required.

In claim 14, the recitation of “a second resistor” in line 2 lacks proper antecedent basis because there is no first resistor recited in claim 13.

In claim 15, the recitation of “a fourth constant current source” in line 2 lacks proper antecedent basis because there is no first, second or third constant current sources recited in claim 1 or claim 13. The recitation of “a fourth constant current source circuit connected in series with fourth diode between the second port and the gate terminal of the first MOS transistor” is indefinite because it is misdescriptive. Figure 1 shows two current sources 20 and 28. However, the two current source are not connected as claimed. Clarification and correction is required.

Correction is required.

In claim 16, the recitation of “a fifth diode” in line 2 lacks proper antecedent basis because there is no first, second, third or fourth diodes recited in claim 1. Correction is required.

In claim 17, the recitation of “a third switch” and “a fourth switch” lacks proper antecedent basis because there is no first or second switches recited in claim 1 or claim 16. Correction is required.

In claim 20, the recitation of “a sixth diode”, “a fifth switch”, “a sixth switch” lacks proper antecedent because there are no fifth diode or fourth switch recited in claim 1. Correction is required.

Claims 8-9, 11, 18-19 and 21 are indefinite because of the technical deficiencies of claims 6, 10, 16 and 20.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by McDaniel (USP 6,400,189). Figure 4 shows a level shifting circuit comprising a first MOS transistor (90), first terminal (PADIN), a second terminal (17), a second MOS transistor (68), power supply terminal (Vpwrp) supplies a power supply voltage corresponding to a reference logic level, a bias means (30) for supplying a prescribed bias voltage below the power supply voltage to the gate terminal of the first MOS transistor as called for in claim 1.

Regarding claim 2, the clamping circuit is seen the circuit 34 of McDaniel.

Regarding claim 6, the second clamping circuit is seen as the transistors 92, 94 and 96.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 10-12 rejected under 35 U.S.C. 103(a) as being unpatentable over McDaniel (USP 6,400,189). Figure 4 shows a level shifting circuit comprising a first MOS transistor (90), first terminal (PADIN), a second terminal (17), a second MOS transistor (68), power supply terminal (Vpwrp) supplies a power supply voltage corresponding to a reference logic level, a bias means (30) for supplying a prescribed bias voltage below the power supply voltage to the gate terminal of the first MOS transistor. Figure 4 of McDaniel further shows a transistor connected diode (64) having anode electrode connected to the first port and cathode electrode connected to the gate of the first MOS transistor instead of a discrete diode as called for in claim 10. However, it is notoriously well known in the art that transistor connected diode and discrete diode are interchangeable. Substitution of one for the other usually does not affect the overall operation of the intended circuit. Therefore, outside of non-obvious results, the obviousness of substituting a discrete diode for a transistor connected diode will not be patentable under 35 USC 103(a).

Regarding claim 11, the limitation of cascading a resistor in between the diode and the gate of the first MOS transistor is well known for protecting the first MOS transistor from a

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sudden surge in current. Therefore, outside of non-obvious results, the obviousness of using a resistor to limit the current input to the gate of the first MOS transistor and preventing the first MOS transistor from surge current will not be patentable under 35USC 103(a).

Regarding claim 12, insofar as understood, the current source is seen the current generated by transistor 66.

Allowable Subject Matter

9. Claims 4-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 3, 7-9 and 13-21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. Claims 22-24 are presently allowed.

Conclusion

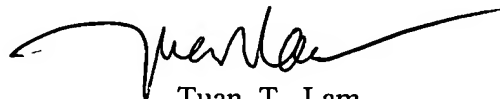
12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Lam whose telephone number is 571-272-1744. The examiner can normally be reached on Monday to Friday (7:30 am to 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY P CALLAHAN can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan T. Lam
Primary Examiner
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6/18/2004